

eVolve Optimization Service reduces total drilling time per well by an average of 25% in Bakken Shale operation

Innovation in action

A Bakken Shale client needed to reduce their total drilling time in a six-well pad. The eVolve team worked with the client to attain improved drilling performance by using an automated drilling control system informed by high-speed downhole dynamics data. By eliminating a planned bit trip in the vertical section, performance and consistency were improved and significant time was saved.

- Reduced drilling time in vertical sections by 31%
- Drilled the vertical section of the final three wells in one bit run
- Reduced total drilling time by 25% — savings of almost USD 850,000

Technology

NOV's eVolve™ Optimization Service equips existing rigs and rig crews with an advanced toolkit that allows improved real-time decision making and enhanced analytics capability. The eVolve team delivered a customized solution from the AUTOMATE tier, a drilling optimization and automation service incorporating our downhole data-driven control systems and innovative software. Through wired drillpipe telemetry, that downhole data drives the rig surface equipment to safely increase drilling performance.

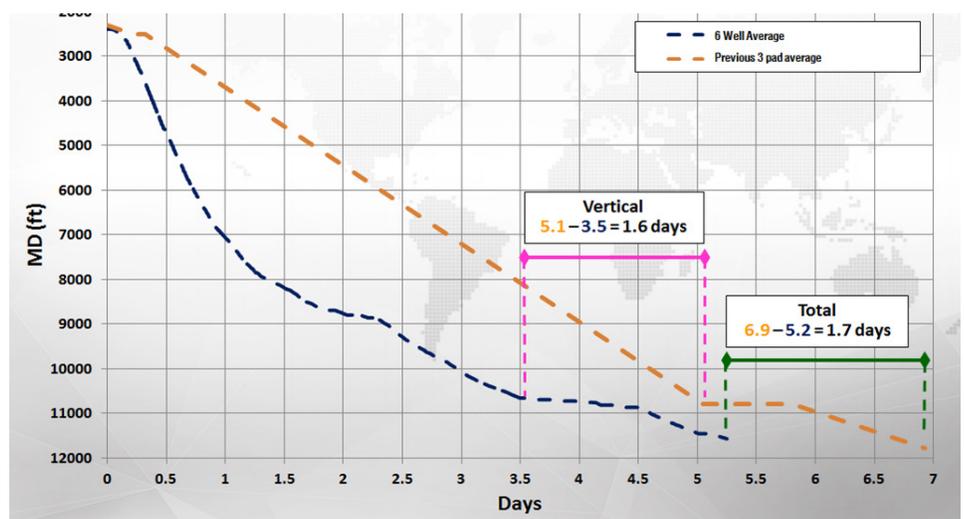
Performance

Our eVolve service was deployed in the client's six wells, which were batch drilled through both the vertical and curve sections. The vertical section had a planned bit trip at 9,000 ft (2743 m) due to low rate of penetration and bit life. The eVolve team suggested the introduction of the BlackStream™ EMS, TrueDrill™, and SoftSpeed™ II systems, which removed the bit trip in the vertical section and reduced total drilling time, with each of the three wells completed in a single bit run.

Results

The client saw a remarkable 25% average reduction in total drilling time on wells with automation services, with a 31% reduction for vertical sections alone. Three out of five wells were completed in the top quartile for the area, and the final three wells all drilled the vertical section in one bit run, something the rig had previously never done. Assuming a standard day rate of USD 100,000 and an average savings of 1.7 days per automated well, the increase in performance and consistency enabled by the AUTOMATE tier saved the client a total of almost USD 850,000 over their previous pad costs.

Figure 1 - This days-versus-depth graph demonstrates that the eVolve service saved the client time and enhanced drilling performance. Wells with automated drilling experienced a 25% increase in overall drilling performance with vertical sections experiencing a 31% increase in average performance, resulting in significant cost savings to the client.



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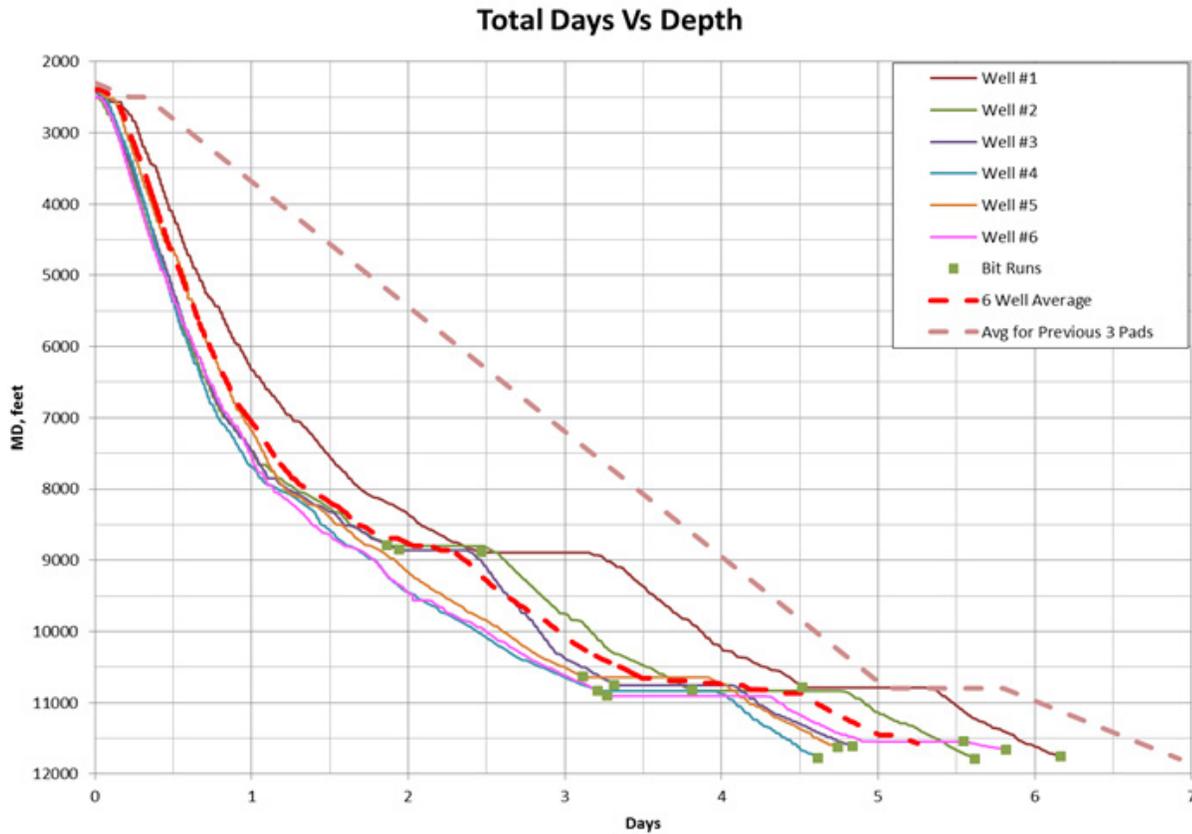


Figure 2 - The days-versus-depth graph above illustrates improved total time and consistency after implementation of the eVolve service. All six wells drilled faster than the average of the previous three pads, and three of the wells drilled the vertical section in one bit run.